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National Adult Immunization Awareness Week — October 12–18, 1997

National Adult Immunization Awareness Week is October 12–18, 1997. This week emphasizes the importance of appropriately vaccinating adults against diphtheria, hepatitis A, hepatitis B, influenza, measles, mumps, pneumococcal disease, rubella, tetanus, and varicella. National Adult Immunization Awareness Week coincides with the beginning of the influenza vaccination season and assists in increasing awareness of the need for intensified implementation of vaccination programs for adults.

Additional information about National Adult Immunization Awareness Week is available from the National Coalition for Adult Immunization, 4733 Bethesda Avenue, Suite 750, Bethesda, MD 20814; telephone (301) 656-0003; fax (301) 907-0878; e-mail adultimm@aol.com; and World-Wide Web site http://www.medscape.com/NCAI/.

Pneumococcal and Influenza Vaccination Levels Among Adults Aged ≥65 Years — United States, 1995

In 1995, pneumonia and influenza together ranked sixth among the 10 leading causes of death in the United States (*1*). An estimated 90% of deaths caused by these illnesses occur among adults aged ≥65 years (*2*). In addition, pneumococcal infections are the most common cause of bacterial pneumonia requiring hospitalization and account for an estimated 40,000 deaths annually in the United States (*3*). A national health objective for 2000 is to increase pneumococcal and influenza vaccination levels to ≥60% for persons at high risk for complications from pneumococcal disease and influenza, including those aged ≥65 years (objective 20.11) (*4*). To estimate state-specific pneumococcal and influenza vaccination levels for persons aged ≥65 years, CDC analyzed data from the 1995 Behavioral Risk Factor Surveillance System (BRFSS). This report summarizes the BRFSS findings, which indicate sustained increases in self-reported coverage levels for pneumococcal and influenza vaccination

Pneumococcal and Influenza Vaccination Levels — Continued

among persons aged ≥65 years; compares these findings with data from the 1993 BRFSS; and assesses progress toward the 2000 objective.

BRFSS is a population-based, random-digit–dialed telephone survey of the noninstitutionalized U.S. population aged ≥18 years. It can be used to determine the prevalence of behaviors and practices related to the leading causes of death (*5*). To assess state-specific vaccination levels, responses to two questions about pneumococcal and influenza vaccinations were analyzed from the 1995 BRFSS; all 50 states participated (the District of Columbia did not participate). Race/ethnicity-specific data are presented only for non-Hispanic blacks, non-Hispanic whites, and Hispanics because numbers for other racial/ethnic groups were too small for meaningful analysis. Data were weighted by age and sex to reflect each state's most recent adult population estimate and by the probability of the respondent's selection. Software for Survey Data Analysis (SUDAAN) was used to calculate 95% confidence intervals (CIs). In 1995, weighted responses were available from 22,639 adults aged ≥65 years (14,636 [64.7%] women and 8003 [35.4%] men) who were interviewed throughout the year as part of state BRFSS surveys. Respondents were asked, "Have you ever had a pneumonia vaccination?" and "During the past 12 months, have you had a flu shot?"

During 1995, a total of 35.6% of respondents reported ever having received pneumococcal vaccine and 58.1% reported receiving influenza vaccine during the preceding 12 months (Table 1). These were substantial increases over 1993 (*6*).

During 1993–1995, overall pneumococcal vaccination levels increased by 6.9 percentage points (from 28.7% to 35.6%). Pneumococcal vaccination levels increased in all states except three. The largest state-specific increase occurred in New Hampshire (from 19.1% to 37.7%), and the largest decrease occurred in New Jersey (from 21.9% to 11.4%). State-specific levels ranged from 11.4% (New Jersey) to 46.6% (Arizona) (median: 36.8%) (Table 2). In 1995, pneumococcal vaccination levels were ≥40% in 12 states, compared with one state in 1993.

During 1993–1995, overall receipt of influenza vaccination increased by 7.7 percentage points (from 50.4% to 58.1%); in addition, influenza vaccination levels increased in 45 states and decreased in five. The largest state-specific increase occurred in Tennessee (17 percentage points, from 46.0% to 63.0%), and the largest decrease occurred in New Jersey (7.6 percentage points, from 53.0% to 45.6%). State-specific levels ranged from 44.2% (Alabama) to 70.0% (Utah) (median: 59.2%). Influenza vaccination levels were ≥60% in 23 states (an increase from five states in 1993) and ≥50% in 45 states (an increase from 24 states in 1993).

During 1995, reported sex-specific pneumococcal and influenza vaccination levels were similar to the overall mean level (Table 1), and non-Hispanic whites were more likely to report ever receiving pneumococcal vaccine (37.4%) than either Hispanics (24.2%) or non-Hispanic blacks (19.7%). In addition, non-Hispanic whites were substantially more likely to report having received influenza vaccine during the preceding 12 months (60.1%) than Hispanics (50.0%) or non-Hispanic blacks (39.3%) (Table 1). Both pneumococcal and influenza vaccination levels were lowest among non-Hispanic blacks (19.7% and 39.3%, respectively). Compared with 1993, race/ethnicity-specific levels for both vaccines in 1995 were higher for all racial/ethnic groups analyzed (except for blacks for pneumococcal vaccine) and were substantially higher for non-Hispanic whites.

Pneumococcal and Influenza Vaccination Levels — Continued

TABLE 1. Percentage of persons aged ≥65 years who reported receiving pneumococcal* or influenza† vaccine, by sex and race/ethnicity§, 1995, and percentage point difference in vaccination coverage levels from 1993 to 1995 — United States, Behavioral Risk Factor Surveillance System (BRFSS)¶

		Pneumococcal vaccine			Influenza vaccine		
Characteristic	Sample size	%	(95% CI)	% Point difference from 1993 to 1995	%	(95% CI**)	% Point difference from 1993 to 1995
Sex							
Men	8,003	34.1	(32.1%–35.8%)	5.9	58.4	(56.6%–60.2%)	9.6
Women	14,636	36.6	(35.4%–37.9%)	7.5	58.0	(56.7%–59.2%)	6.5
Race/Ethnicity							
White, non-Hispanic	20,133	37.4	(36.3%–38.5%)	7.6	60.1	(59.0%–61.2%)	7.9
Black, non-Hispanic	1,302	19.7	(16.7%–22.7%)	–5.3	39.3	(35.6%–43.1%)	6.2
Hispanic††	590	24.2	(18.9%–29.4%)	3.2	50.0	(43.7%–56.3%)	2.4
Other	552	36.0	(25.0%–46.0%)	17.3	58.5	(48.6%–68.5%)	18.8
Total	**22,639§§**	**35.6**	**(34.5%–36.6%)**	**6.9**	**58.1**	**(57.1%–59.2%)**	**7.7**

*Ever during their lifetimes.
†During the preceding 12 months.
§Numbers for racial/ethnic groups other than blacks, whites, and Hispanics were too small for meaningful analysis.
¶All 50 states participated in the 1995 BRFSS (the District of Columbia did not participate). Weighted sample size=22,639.
**Confidence interval.
††Persons of Hispanic origin can be of any race.
§§Some persons (n=62) answered the vaccination question but refused to answer the question about race/ethnicity.

Because self-reported vaccination levels were consistently lower for non-Hispanic blacks and Hispanics than for non-Hispanic whites and because race-specific levels varied among the states, census data were examined to determine whether the size and distribution of these groups affected overall state vaccination levels. However, there was no clear association between overall state-specific pneumococcal and influenza vaccination levels and either size or vaccination levels of minority populations aged ≥65 years in states. State-specific variations persisted when crude pneumococcal and influenza vaccination rates were adjusted for race/ethnicity. The percentage point difference between the crude and adjusted rates was calculated to assess the effect of adjusting for race/ethnicity in each state. For pneumococcal vaccination, adjusted rates for 35 (70%) of the 50 states were within 5 percentage points of the crude rates (range: –8.8% to 26.2%). For influenza vaccination, adjusted rates for 40 (80%) of the 50 states were within 5 percentage points of the crude rates (range: –15.8% to 9.8%).

Reported by the following BRFSS coordinators: J Durham, MPA, Alabama; P Owen, Alaska; B Bender, Arizona; J Senner, PhD, Arkansas; B Davis, PhD, California; M Leff, MSPH, Colorado; M Adams, MPH, Connecticut; F Breukelman, Delaware; D McTague, MS, Florida; E Pledger, MPA, Georgia; J Cooper, MA, Hawaii; C Johnson, MPH, Idaho; B Steiner, MS, Illinois; N Costello, MPA, Indiana; P Busick, Iowa; M Perry, Kansas; K Asher, Kentucky; R Meriwether, MD, Louisiana;

TABLE 2. Percentage of persons aged ≥65 years who reported receiving pneumococcal* or influenza† vaccine, by state, 1995, and percentage point difference in vaccination coverage from 1993 to 1995 — United States, Behavioral Risk Factor Surveillance System (BRFSS)§

State	Pneumococcal vaccine			Influenza vaccine		
	%	(95% CI)	% Point difference from 1993 to 1995	%	(95% CI¶)	% Point difference from 1993 to 1995
Alabama	31.2	(26.1%–36.3%)	6.2	44.2	(38.5%–49.8%)	4.2
Alaska	41.1	(25.2%–57.0%)	10.0	49.4	(33.4%–65.4%)	–3.9
Arizona	46.6	(40.5%–52.8%)	15.9	64.7	(58.8%–70.5%)	–1.6
Arkansas	35.8	(30.6%–40.9%)	8.6	60.5	(55.5%–65.5%)	8.7
California	42.7	(38.0%–47.3%)	7.0	59.4	(54.6%–64.2%)	5.0
Colorado	44.6	(28.6%–50.5%)	4.6	65.9	(60.4%–71.5%)	2.0
Connecticut	36.9	(31.3%–42.4%)	18.1	62.3	(56.6%–67.9%)	8.9
Delaware	39.9	(35.2%–44.6%)	4.3	57.2	(52.1%–62.2%)	2.2
Florida	38.4	(34.8%–42.1%)	13.2	61.3	(57.7%–64.9%)	15.0
Georgia	37.8	(33.3%–42.4%)	10.1	46.6	(41.7%–51.5%)	2.2
Hawaii	40.5	(35.0%–46.0%)	2.7	62.1	(57.0%–67.6%)	5.5
Idaho	38.8	(34.4%–43.2%)	5.7	64.2	(59.7%–68.6%)	–0.2
Illinois	28.3	(22.7%–34.0%)	5.2	57.6	(51.4%–63.8%)	12.4
Indiana	33.2	(28.8%–37.6%)	6.5	58.8	(54.0%–63.5%)	11.8
Iowa	43.6	(39.8%–47.3%)	11.2	62.8	(59.2%–66.3%)	13.1
Kansas	41.4	(36.3%–46.4%)	18.3	58.7	(53.6%–63.8%)	6.3
Kentucky	24.1	(20.4%–27.9%)	–0.1	52.1	(47.7%–56.4%)	7.6
Louisiana	25.9	(20.3%–30.6%)	7.0	52.0	(45.8%–58.1%)	15.8
Maine	34.8	(28.3%–41.2%)	14.4	64.5	(58.2%–71.0%)	15.3
Maryland	32.2	(28.8%–35.6%)	–1.5	57.3	(53.7%–61.0%)	8.7
Massachusetts	30.8	(25.2%–36.3%)	9.3	58.9	(53.0%–64.8%)	9.2
Michigan	38.5	(33.8%–43.2%)	13.9	56.7	(52.0%–61.5%)	9.0
Minnesota	39.2	(35.6%–42.7%)	13.0	62.9	(59.1%–66.5%)	12.0
Mississippi	38.7	(33.0%–44.3%)	11.1	56.7	(50.8%–62.5%)	14.3
Missouri	30.6	(24.6%–36.6%)	0	66.5	(60.4%–72.5%)	11.7
Montana	34.6	(28.3%–40.9%)	0.8	63.8	(57.4%–70.1%)	1.4
Nebraska	35.0	(30.4%–39.5%)	7.6	63.9	(59.2%–68.5%)	10.7
Nevada	38.8	(32.9%–44.5%)	7.4	51.7	(45.8%–57.6%)	8.1
New Hampshire	37.7	(31.1%–44.2%)	18.6	53.4	(46.7%–60.1%)	3.8
New Jersey	11.4	(6.9%–15.9%)	–10.5	45.6	(38.1%–53.1%)	–7.6

New Mexico	38.5	(31.4%–45.7%)	6.8	68.5	(61.6%–75.5%)	7.7
New York	25.7	(21.0%–30.3%)	3.6	55.9	(50.6%–61.2%)	10.6
North Carolina	30.7	(27.2%–34.2%)	4.4	52.2	(48.4%–56.1%)	1.3
North Dakota	32.1	(27.4%–36.8%)	12.3	56.9	(51.9%–61.7%)	8.0
Ohio	39.8	(33.0%–46.6%)	11.9	62.7	(56.2%–69.2%)	12.6
Oklahoma	36.8	(32.3%–41.3%)	7.7	60.8	(56.0%–65.5%)	2.3
Oregon	44.7	(40.3%–49.1%)	10.0	67.0	(62.9%–71.0%)	11.2
Pennsylvania	36.5	(31.7%–41.3%)	11.5	57.7	(53.3%–62.1%)	9.1
Rhode Island	29.2	(24.0%–34.5%)	9.1	65.6	(60.2%–71.0%)	14.4
South Carolina	25.8	(21.1%–30.6%)	6.4	49.6	(44.1%–55.0%)	2.3
South Dakota	31.1	(26.3%–36.0%)	4.5	59.9	(55.0%–64.9%)	12.2
Tennessee	29.5	(24.7%–34.3%)	4.1	63.0	(57.7%–68.4%)	17.1
Texas	42.7	(35.9%–49.6%)	5.5	56.4	(49.6%–63.2%)	–0.7
Utah	41.9	(36.5%–47.4%)	6.6	70.0	(65.2%–74.8%)	15.8
Vermont	34.9	(30.2%–39.6%)	6.2	63.5	(58.6%–68.4%)	6.4
Virginia	38.7	(31.5%–45.8%)	4.5	52.5	(45.6%–59.4%)	6.7
Washington	44.4	(39.5%–49.2%)	12.3	66.4	(61.8%–71.0%)	13.0
West Virginia	36.1	(31.7%–40.5%)	7.6	53.0	(48.6%–57.4%)	3.3
Wisconsin	34.8	(29.3%–40.3%)	7.4	56.7	(50.9%–62.6%)	7.7
Wyoming	43.1	(37.9%–48.1%)	NA**	66.5	(61.6%–71.5%)	NA
Range	*11.4–46.6*			*44.2–70.0*		
Median	*36.8*			*59.2*		
Overall mean	*35.6*	*(34.5%–36.6%)*		*58.1*	*(57.1%–59.2%)*	

*Ever during their lifetimes.
†During the preceding 12 months.
§All 50 states participated in the 1995 BRFSS (the District of Columbia did not participate). Weighted sample size=22,639; 14,636 (64.7%) women and 8003 (35.4%) men.
¶Confidence interval.
**Not applicable (Wyoming did not participate in the 1993 BRFSS).

Pneumococcal and Influenza Vaccination Levels — Continued

D Maines, Maine; A Weinstein, MA, Maryland; D Brooks, MPH, Massachusetts; H McGee, MPH, Michigan; N Salem, PhD, Minnesota; S Loyd, Mississippi; T Murayi, PhD, Missouri; P Smith, Montana; S Huffman, Nebraska; E DeJan, MPH, Nevada; K Zaso, MPH, New Hampshire; G Boeselager, MS, New Jersey; W Honey, New Mexico; T Melnik, DrPH, New York; K Passaro, PhD, North Carolina; J Kaske, MPH, North Dakota; R Indian, MS, Ohio; N Hann, MPH, Oklahoma; J Grant-Worley, MS, Oregon; L Mann, Pennsylvania; J Hesser, PhD, Rhode Island; D Shepard, MD, South Carolina; M Gildemaster, South Dakota; D Ridings, Tennessee; K Condon, Texas; R Giles, Utah; R McIntyre, PhD, Vermont; J Stones, Virginia; K Wynkoop-Simmons, PhD, Washington; F King, West Virginia; E Cautley, MS, Wisconsin; M Futa, Wyoming. Adult Vaccine Preventable Diseases Br, Epidemiology and Surveillance Div, and Assessment Br, Data Management Div, National Immunization Program; Behavioral Surveillance Br, Div of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: Vaccination levels against pneumococcal infection and influenza in the United States increased steadily during 1973–1993 (*6,7*). Based on the findings in this report, in 1995 state-specific self-reported pneumococcal and influenza vaccination levels for persons aged ≥65 years were the highest ever. Self-reported vaccination levels for the 1995 BRFSS varied by state and race/ethnicity, and the variation is consistent with previous reports (*6–8*). Even after adjusting for race/ethnicity, variations persisted in crude pneumococcal and influenza vaccination rates, suggesting that state-specific variations reflected other factors in addition to race/ethnicity distribution (e.g., regional variations in physician practice patterns, education, income level, insurance coverage, the prevalence of specific risk factors in target groups, and varying patient attitudes toward aspects of medical care [*6,9,10*]).

An important limitation of this study is that data about vaccination status were self-reported and were not validated; therefore, the vaccination levels may not be precise. However, the predictive value and accuracy of self-reported influenza vaccination was 91% when vaccination status was validated by record review (*11*); no similar data are available for validation of pneumococcal vaccination levels. In addition, although this study documents the highest overall levels ever of pneumococcal and influenza vaccination in the United States among persons aged ≥65 years, vaccination levels were low among non-Hispanic blacks and among Hispanics.

Strategies to improve delivery of these vaccines to all persons at risk should include continued 1) assessment of factors accounting for differential state-specific and race/ethnicity-specific vaccination rates, particularly physician practice patterns and patient attitudes; 2) collaboration between public and private organizations to improve awareness about the need for these vaccines; 3) changes in clinical practice to improve vaccine delivery; 4) expansion of pneumococcal and influenza vaccination services by working with private, medical, and community groups to limit cost and remove accessibility constraints; 5) collaboration of public and private medical providers with Health Care Financing Administration Quality Improvement Organizations (formerly Peer Review Organizations) to increase vaccination levels among Medicare beneficiaries; and 6) encouragement of local health departments to enroll as Medicare providers, implement pneumococcal and influenza vaccination programs, and file claims for pneumococcal and influenza vaccination services, which are reimbursable by Medicare. In addition, timely reporting and collection of surveillance data on vaccination coverage (e.g., through BRFSS) and disease are necessary to assess the effectiveness of vaccination programs and assist in targeting efforts to improve programs and vaccination levels.

Pneumococcal and Influenza Vaccination Levels — Continued

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Missed Opportunities for Pneumococcal and Influenza Vaccination of Medicare Pneumonia Inpatients — 12 Western States, 1995

Invasive pneumococcal infection (i.e., bacteremia and meningitis) and influenza are important causes of morbidity and mortality among Medicare beneficiaries aged ≥65 years. In the United States, the estimated annual incidence of pneumococcal bacteremia among persons aged ≥65 years is 50–83 cases per 100,000 persons (*1*), and such infections are associated with a high case-fatality rate. Older persons account for >90% of influenza-related deaths (*2*), and Medicare costs for influenza-related hospitalizations can reach $1 billion each year (*3*). The Advisory Committee on Immunization Practices (ACIP) recommends that persons aged ≥65 years receive at least one lifetime dose of pneumococcal vaccine (*1*) and annual influenza vaccination (*2*) and that hospitalization should be used as an opportunity to vaccinate. This report describes an assessment of the vaccination coverage of Medicare pneumonia patients who were admitted to hospitals in 12 western states* from October 1994 through September 1995 (fiscal year 1995); the findings of this assessment indicate that the opportunity to provide pneumococcal vaccine was missed for up to 80% of those hospitalized at any time during the year, and the opportunity to provide influenza vaccine was missed for 65% of those who were admitted during October–December 1994.

As part of an assessment of pneumonia treatment provided in these states during fiscal year 1995, Medicare billing data maintained by the Health Care Financing Administration (HCFA) were used to identify pneumonia inpatients (i.e., those with an

*Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming.

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admitting or principal diagnosis *International Classification of Diseases, Ninth Revision, Clinical Modification* [ICD-9-CM], code of 480.0–483.99 or 485–486.99 [pneumonia], 487.0 [influenza with pneumonia], 510.0–510.9 [empyema], 511.1 [pleurisy, bacterial], or 513.0–513.09 [lung abscess], or with an admitting or principal diagnosis code of either 038.2 [septicemia, pneumococcal] or 038.41 [septicemia, *Hemophilus influenzae*] and a secondary diagnosis code of 480.0–483.99, 485–486.99, or 487.0). A total of 87,230 such hospitalizations were identified. This report includes data from state-specific random samples totaling 5048 hospitalizations of beneficiaries who were aged ≥65 years, had no inpatient care during the 14 days before admission, were not admitted from another acute-care hospital, and were discharged alive to other than an acute-care hospital. The state-distribution of the 5048 hospitalizations was as follows: Alaska (4.1%), Arizona (6.8%), California (five regional samples, 33.6%), Colorado (7.2%), Hawaii (5.2%), Idaho (6.1%), Montana (5.9%), Nevada (6.3%), New Mexico (6.6%), Oregon (6.9%), Utah (6.2%), and Wyoming (5.1%). Inpatient data were abstracted by FMAS Corporation[†] (Columbia, Maryland) from hospital medical records and linked to Medicare pneumococcal vaccine billing data for 1991 through 1995 and influenza vaccine billing data for September–December 1994, the periods for which data are available. Of the 5048 hospitalizations, 1312 occurred during October–December 1994, the primary influenza vaccination season. The analysis for pneumococcal vaccine excluded data for beneficiaries who were enrolled in a managed-care plan at any time during 1991–1995 (n=500), and the influenza vaccine analysis excluded data for beneficiaries who were enrolled at any time during September–December 1994 (n=70) because plans do not bill Medicare for vaccinations. State-weighted vaccine coverage estimates and 95% confidence intervals (CIs) were calculated.

Of the 4548 patients who were included in the analysis and who had been admitted during fiscal year 1995, 19.6% (95% CI=18.3%–20.9%) had evidence of pneumococcal vaccination at some time during 1991–1995 (Table 1). This estimate included 12.3% (95% CI=11.2%–13.4%) for whom a bill had been submitted for vaccination at any time from 1991 to the date of admission, 6.9% (95% CI=6.1–7.7) for vaccination from the date of discharge through 1995, and 0.4% (95% CI=0.2%–0.6%) with vaccination during hospitalization. Estimated vaccination coverage was similar in all age groups. Previous pneumococcal vaccination was listed on 2.4% (95% CI=1.9%–2.8%) of admission histories. Of the patients for whom there was no evidence of pneumococcal vaccination at any time during 1991–1995, 66.6% (95% CI=64.7%–68.4%) had at least one chronic condition (e.g., diabetes or chronic lung disease) associated with a possible increased risk for serious pneumococcal infection, and 9.2% (95% CI=8.1%–10.3%) had a condition (e.g., leukemia, lymphoma, or human immunodeficiency virus infection) associated with substantially reduced immunogenicity of the vaccine.

Of 1242 patients who were included in the analysis and who had been admitted during October–December 1994, 35.4% (95% CI=32.3%–38.5%) had evidence of influenza vaccination during September–December 1994 (Table 2). This estimate included 29.4% (95% CI=26.5%–32.3%) for whom a bill had been submitted for vaccination from September 1 to the date of admission, 5.3% (95% CI=3.9%–6.7%) for vaccination from the date of discharge through December 31, and 0.7% (95% CI=0.2%–1.2%) with

[†]Use of trade names and commercial sources is for identification only and does not imply endorsement by CDC or the U.S. Department of Health and Human Services.

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vaccination during hospitalization. Estimated vaccination coverage was similar in all age groups. Previous vaccination was listed on 4.7% (95% CI=3.4%–5.9%) of admission histories.

Reported by: PM Houck, MD, JK Lowery, PhD, CM Prela, PharmD, Div of Clinical Standards and Quality, Health Care Financing Administration, Region 10, Seattle, Washington.

Editorial Note: ACIP recommends administration of pneumococcal and influenza vaccines to inpatients as a strategy for increasing vaccination coverage among adults (*1,2*). In addition, the American Hospital Association Technical Panel on Infections within Hospitals has encouraged hospitals to assist in vaccinating adults, suggested

TABLE 1. Pneumococcal vaccination* coverage levels among Medicare pneumonia patients admitted to hospitals, by age group — 12 western states,† October–December 1994

	Age group (yrs)									
	65–69 (n=662)		70–74 (n=877)		75–79 (n=911)		≥80 (n=2098)		Total (n=4548)	
Vaccination	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Billed before admission	9.4	(±2.3%)	12.7	(±2.6%)	12.3	(±2.4%)	13.0	(±1.7%)	**12.3**	(±1.1%)
Administered in hospital	0	(±0.5%)	0.8	(±0.7%)	0.5	(±0.5%)	0.4	(±0.3%)	**0.4**	(±0.2%)
Billed after discharge	9.4	(±2.4%)	9.0	(±2.2%)	7.7	(±2.0%)	5.0	(±1.0%)	**6.9**	(±0.8%)
Any time, 1991–1995	**18.8**	(±3.3%)	**22.5**	(±3.2%)	**20.5**	(±3.0%)	**18.4**	(±1.9%)	**19.6**	(±1.3%)

*Medicare billing during 1991–1995 or documented inpatient administration during pneumonia hospitalization, October 1994–September 1995.
†Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming.
§Confidence interval.

TABLE 2. Influenza vaccination* coverage levels among Medicare pneumonia patients admitted to hospitals, by age group — 12 western states,† September–December 1994

	Age group (yrs)									
	65–69 (n=180)		70–74 (n=239)		75–79 (n=229)		≥80 (n=594)		Total (n=1242)	
Vaccination	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Billed before admission	22.1	(±7.3%)	33.9	(±7.1%)	33.0	(±6.9%)	28.9	(±4.2%)	**29.4**	(±2.9%)
Administered in hospital	0	—	0.9	(±1.2%)	0.9	(±1.4%)	0.8	(±0.8%)	**0.7**	(±0.5%)
Billed after discharge	7.9	(±4.6%)	6.0	(±3.1%)	2.3	(±1.9%)	5.4	(±1.9%)	**5.3**	(±1.4%)
Any time, September–December 1994	**30.0**	(±8.0%)	**40.8**	(±7.3%)	**36.2**	(±7.1%)	**35.1**	(±4.4%)	**35.4**	(±3.1%)

*Medicare billing, September–December 1994, or documented inpatient administration during pneumonia hospitalization, October–December 1994.
†Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming.
§Confidence interval.

Missed Opportunities for Vaccination — Continued

that clinical staff obtain vaccination histories from all inpatients, and suggested that recommendations for vaccinations should be incorporated into discharge plans or implemented during prolonged hospitalizations (*4*). However, the findings in this report indicate that for elderly persons with pneumonia who were hospitalized in states in the West, vaccination histories rarely are included in the hospital medical record; in addition, indicated vaccines consistently are not provided to inpatients and are provided infrequently following discharge. Specifically, the opportunities to provide pneumococcal and influenza vaccines were missed for up to 80% and 65%, respectively, of eligible persons.

An important feature of hospital-based vaccination programs is that they permit the targeting of vaccines to persons within the health-care system who may be at increased risk for subsequent serious pneumococcal disease and influenza. Previous hospitalization has been a risk factor for subsequent serious pneumococcal infection, and modest levels of inpatient vaccination could substantially reduce admissions (*5*). High coverage levels can be attained in hospital-based influenza vaccination programs, although such programs must be well organized (*6*); optimal coverage may be attained when standing orders are written to allow nursing staff to offer and administer vaccine to patients who do not have contraindications.

Low coverage levels, regardless of patient setting, may reflect physician and patient beliefs that these vaccines are not effective, fears about adverse reactions, and concerns about reimbursement. However, influenza vaccine is both clinically effective and highly cost-effective (*7*); and pneumococcal vaccine is approximately 75% effective in preventing invasive pneumococcal disease in persons aged ≥65 years, including those with chronic diseases (*8*). Medicare has paid for pneumococcal vaccination since 1981 and for influenza vaccination since 1993.

One important limitation of the analysis described in this report is the potential underestimation of outpatient vaccine administration. Bills submitted before 1991 for pneumococcal vaccine would have been missed, and Medicare billing data miss approximately 20% of influenza vaccinations in the fee-for-service population. In addition, vaccine may have been withheld for legitimate reasons not apparent from the medical record. However, inpatient vaccination data presented in this report are highly reliable because the actual medical records were examined.

Based on Behavioral Risk Factor Surveillance System (BRFSS) estimates for each state in 1995, among persons aged ≥65 years the median pneumococcal vaccine coverage was only 37%, and only 59% had received influenza vaccine during the previous year (*9*). The BRFSS estimates in 1995 and the findings in this report underscore that hospitalization represents an opportunity to vaccinate Medicare beneficiaries who may be at high risk for subsequent severe pneumococcal and influenza infections. The results of this assessment are being used by HCFA Quality Improvement Organizations (formerly Peer Review Organizations) to encourage physicians and other providers to administer needed vaccines during or immediately following hospitalization.

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Missed Opportunities for Vaccination — Continued

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Health Risk Factor Surveys of Commercial Plan- and Medicaid-Enrolled Members of Health-Maintenance Organizations — Michigan, 1995

Behavioral risk factors involving tobacco use, improper diet, physical inactivity, alcohol abuse, and motor-vehicle–related injury contributed to approximately 850,000 deaths in the United States in 1990 (*1*). CDC's Behavioral Risk Factor Surveillance System (BRFSS) has been the primary means for tracking progress toward reduction of these and other health risks at the state level (*2*). This report summarizes the use of telephone surveys conducted by the Michigan Consortium for Quality Improvement in Health Care during April–August 1995 to evaluate the health-risk profiles of commercial plan- and Medicaid-enrolled health-maintenance organization (HMO) members in Michigan. The findings indicate that HMOs can use the BRFSS model to monitor health risks, health status, and use of preventive services among member groups.

Of the 18 licensed HMOs in Michigan, eight agreed to participate in the commercial members survey; five of these eight HMOs also participated in the Medicaid members survey. The National Committee for Quality Assurance coordinated the survey sampling and data collection through an independent statistical survey firm. The survey targeted a random sample of non-Medicare beneficiary members aged ≥18 years from within each category (i.e., commercial members or Medicaid members). For each category and each HMO, 450 respondents were targeted from a random sample of 2000 members. The overall response rate across all samples was 90.8% (86.5% within the commercial sample and 94.6% within the Medicaid sample). The mean number of commercial respondents per plan was 453, and the mean number of Medicaid respondents per plan was 430. For all analyses, data were pooled across HMOs, and separate analyses were conducted of commercial and Medicaid HMO members. Final samples consisted of 3626 commercial respondents and 2151 Medicaid respondents.

Health Risk Factor Surveys — Continued

Survey questions were taken directly from the 1993 and 1994 Michigan BRFSS and asked about demographics; diabetes; and health factors including alcohol use, cigarette smoking, physical inactivity, general health status, cholesterol and blood pressure screening, and breast and cervical cancer screening. For comparisons between the commercial and Medicaid HMO members and between HMO members and statewide Michigan BRFSS participants from 1994 and 1995 (*3,4*), all estimates were directly standardized by age and sex to the 1992 Michigan intercensal population.

Of the alcohol-related factors, the prevalence of driving after drinking during the preceding month was higher in the commercial sample (1.5%) than in the Medicaid sample (0.2%) (Table 1) ($p \leq 0.05$), and the prevalence of binge drinking (consuming five or more alcoholic drinks on one or more occasion during the preceding month) was

TABLE 1. Estimated prevalence of selected health-risk factors among members of Michigan health-maintenance organizations (HMOs), by payor category,* 1995, and estimated prevalence from the Michigan Behavioral Risk Factor Surveillance System (BRFSS), 1994–1995†

Characteristic	Payor category		1995 BRFSS
	Commercial HMO	Medicaid HMO	
Drank ≥5 alcoholic beverages on ≥1 occasion during the preceding month	13.1%§	12.5%§	17.1%
Engaged in drinking and driving¶	1.5%§**	0.2%§	3.3%
Reported being a current smoker††	19.4%	44.1%§	25.9%§§
Had no leisure-time physical activity during the preceding month¶¶	12.9%§**	27.9%§	23.4%§§
Did not use safety belt	10.1%§**	23.3%§	13.3%
Self-reported fair or poor health status	8.1%§**	34.5%§	13.5%§§
Ever been told had high cholesterol	27.2%§**	34.6%§	31.4%
Ever been told had diabetes***	3.9%§**	9.0%§	5.4%
Had blood pressure checked during the preceding 2 years	97.8%§	98.5%§	94.8%
Had cervical cancer screening during the preceding 3 years†††	93.2%§	91.8%§	81.2%§§
Ever had cholesterol checked	78.5%§**	62.3%§	75.3%
Ever had a mammogram§§§	93.3%§**	86.7%	88.0%

*Eight HMOs agreed to participate in the commercial members survey, and five of these eight HMOs also participated in the Medicaid members survey.
†Data standardized by age and sex to the 1992 Michigan intercensal population.
§HMO weighted prevalence (commercial or Medicaid) significantly different from Michigan BRFSS at $p \leq 0.05$.
¶Drove at least once during the preceding month after having had "perhaps too much to drink."
**Commercial HMO and Medicaid HMO weighted prevalences significantly different at $p \leq 0.05$.
††Ever smoked 100 cigarettes and was a current smoker.
§§1994 Michigan Behavioral Risk Factor Survey rate used for comparison.
¶¶Had no physical activities such as running, calisthenics, golf, gardening, or walking for exercise.
***Excludes pregnancy-related diabetes.
†††Includes women aged ≥18 years.
§§§Includes women aged ≥40 years.

Health Risk Factor Surveys — Continued

similar in both the commercial (13.1%) and Medicaid samples (12.5%). The prevalences of both of these behaviors were lower among the HMO populations than in the statewide sample ($p \leq 0.05$).

The prevalences of current cigarette smoking and physical inactivity during the preceding month were higher in the Medicaid sample (44.1% and 27.9%, respectively) than in either the commercial sample (19.4% and 12.9%) or the state BRFSS sample (25.9% and 23.4%). Nonuse of safety belts was most prevalent in the Medicaid HMO sample (23.3%), followed by the state BRFSS sample (13.3%), then by the commercial HMO sample (10.1%). Among persons in the Medicaid sample, the prevalences of self-reported fair or poor health status, ever having had a high cholesterol level, and ever having had diabetes were higher than among those in either the commercial HMO sample or the statewide BRFSS sample ($p \leq 0.05$).

Prevalences of reported blood pressure screening during the preceding 2 years and cervical cancer screening during the preceding 3 years were similar for the two HMO sample groups, and for both groups were higher than those prevalences statewide. In comparison, the prevalences of reported cholesterol and mammographic screening were lower among the Medicaid HMO population than either the commercial HMO population or statewide sample.

Reported by: VF Gurley, RM Davis, Center for Health Promotion and Disease Prevention, Henry Ford Health System, Detroit; M Dascola, DataStat Inc., Ann Arbor; Blue Care Network of East Michigan, Saginaw; Blue Care Network of Mid Michigan, Lansing; Care Choices, Farmington Hills; Health Alliance Plan of Michigan, Detroit; HealthPlus of Michigan, Farmington Hills; OmniCare Health Plan, Detroit; SelectCare HMO, Troy; The Wellness Plan, Detroit; Michigan Dept of Community Health, Community Public Health Agency. RG Finkbiner, CM Mercil, MJ Braid, National Committee for Quality Assurance, Washington, DC. Div of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: In previous health risk factor surveys conducted by managed-care organizations (*5*), the prevalences of clinical preventive service use have been higher, and behavioral risk factors have been lower among privately insured members when compared with statewide BRFSS samples. The health risk factor survey in Michigan illustrates how a collaborative effort involving multiple independent HMOs enabled comparisons of the prevalences of risk factors and clinical preventive service use among privately and publicly insured populations.

HMOs in Michigan have used the findings of this survey to guide risk-reduction program planning or refinement. For example, the unstandardized rates were used by quality managers in each HMO to compare their rates with the aggregate rates of the other participating HMOs. In addition, some HMOs used the findings to encourage physicians to address risk-reduction issues with their patients, to compare survey data on medical screening with administrative data sources, and to identify geographic areas for targeting interventions toward high-risk populations.

In 1995, CDC created a Managed Care Working Group to encourage public-private collaboration on preventive health activities (*6*). This group recommended that managed-care organizations provide leadership in community health promotion, develop partnerships with public health agencies to improve health outcomes, develop prevention-related surveillance, use information systems in health-risk and disease assessment, and evaluate disease prevention intervention effectiveness. The Michigan HMO surveys addressed many of these recommendations through the characterization of population-based health risks, planning of targeted interventions, and

Health Risk Factor Surveys — Continued

establishment of a baseline for evaluating long-term trends in population risk profiles. Routine health risk factor surveys can assist health plans in collecting information on health behaviors for future versions of HMO "report cards," such as the Health Plan Employer Data and Information Set.

The findings in this report are subject to at least three limitations. First, health-risk behaviors may have been underreported because respondents were informed that the survey was being conducted by their HMO; even though confidentiality was assured at the beginning of the interview, some respondents may have feared that unhealthy behaviors might lead to health plan premium increases or membership cancellation. Second, because data were pooled across HMOs, health plan-specific differences in prevalence estimates may be obscured. Third, certain subgroups (e.g., men in the Medicaid sample and persons aged ≥65 years in both HMO samples) were underrepresented in the sample populations.

The findings in this survey are consistent with previously reported associations among demographics, health-risk factors, and the development of disease (*1,7*). In addition, the findings highlight the persistence of the low prevalence of use of preventive services among persons receiving care through Medicaid and suggest the need for targeted interventions to reduce risk and promote health. Health risk factor surveys are effective approaches for monitoring progress toward disease prevention and health promotion regionally, nationally, in special populations, and in health-care–delivery systems. Further collaborations between public health agencies and HMOs, and among HMOs, will enable improved use of traditional public health approaches in the managed-care setting.

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Notice to Readers

International Conference on Emerging Infectious Diseases

CDC, the Council of State and Territorial Epidemiologists, the American Society for Microbiology, the National Foundation for CDC, and other organizations will cosponsor the International Conference on Emerging Infectious Diseases March 8–11, 1998, in Atlanta. The conference will explore the most current research, surveillance, and prevention and control programs addressing all aspects of emerging infectious diseases. Attendance is limited to 2500 participants.

The conference will consist of general and plenary sessions, symposia, and roundtables with invited speakers, presentations on emerging infections activities, oral and poster presentations based on submission of an accepted abstract, and exhibits. The deadline for abstract submission is October 31, 1997. Information about later submission of abstracts for consideration as late-breakers is included in the program materials. Abstracts should address new, reemerging, and drug-resistant infectious diseases that affect human health. A listing of specific categories for submission is included in the registration information.

Additional information is available from four sources: the home page for the *Emerging Infectious Diseases* journal (http://www.cdc.gov/ncidod/EID/eid.htm), from the home page for CDC's National Center for Infectious Diseases (http://www.cdc.gov/ncidod/whatsnew.htm), by sending an e-mail to meetinginfo@asmusa.org, or by calling (202) 942-9248. Proceedings of the conference will be published in *Emerging Infectious Diseases.*

Notice to Readers

Satellite Broadcast on Diabetes

Diabetes: Control is Prevention, a live satellite broadcast, will be held Thursday, October 30, 1997, from 1 p.m. to 3 p.m. eastern standard time. Cosponsors include CDC, state and territorial diabetes-control program representatives, and other partners. This course is designed for state, territorial, and other public health officials, community leaders, and policy makers.

This course will increase awareness, highlight existing efforts, and mobilize communities to improve diabetes outcomes. Experts will discuss quality diabetes care, efforts to reduce the diabetes mellitus burden, and partnership opportunities.

Registration information is available from state health departments; diabetes-control program coordinators; CDC's Division of Diabetes Translation, National Center for Chronic Disease Prevention and Health Promotion, telephone (770) 488-5015; or from the World-Wide Web site http://www.cdc.gov/diabetes.

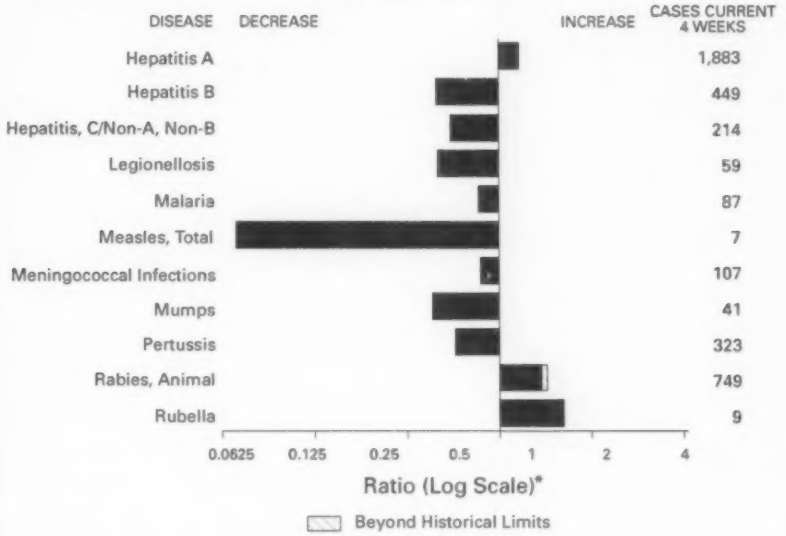
Erratum: Vol. 46, No. 19

In the article, "Tornado-Associated Fatalities—Arkansas, 1997," an error appears in one case in the line listing of cases in Table 1 on page 414. The 29-year-old female decedent in Jackson County should have been listed as a 30-year-old male. Other than slightly changing the demographic profile of the decedents, this change does not affect the findings of the report.

Erratum: Vol. 46, No. 35

In the article, "Chlamydia Screening Practices of Primary-Care Providers—Wake County, North Carolina, 1996," an error appears on page 821 in the second sentence of the second paragraph of the editorial note. The sentence should read, "In Wake County, during 1996–1997, the prevalence of chlamydia infection in female adolescents attending *a family planning clinic* was 10% and in female adolescents attending *an STD clinic* was 17% (North Carolina Chlamydia Prevention Program, unpublished data, 1997).

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending September 27, 1997, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending September 27, 1997 (39th Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	2
Brucellosis	53	Poliomyelitis, paralytic	-
Cholera	6	Psittacosis	34
Congenital rubella syndrome	4	Rabies, human	2
Cryptosporidiosis*	1,209	Rocky Mountain spotted fever (RMSF)	303
Diphtheria	5	Streptococcal disease, invasive Group A	1,093
Encephalitis: California*	72	Streptococcal toxic-shock syndrome*	27
eastern equine*	4	Syphilis, congenital¶	354
St. Louis*	5	Tetanus	32
western equine*	1	Toxic-shock syndrome	93
Hansen Disease	77	Trichinosis	7
Hantavirus pulmonary syndrome*†	15	Typhoid fever	239
Hemolytic uremic syndrome, post-diarrheal*	43	Yellow fever	-
HIV infection, pediatric*§	181		

-:no reported cases
*Not notifiable in all states.
†Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update September 30, 1997.
¶Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending September 27, 1997, and September 28, 1996 (39th Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	NETSS† Cum. 1997	PHLIS§ Cum. 1997	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996
UNITED STATES	43,581	51,390	325,839	323,078	1,709	1,041	205,014	237,181	2,353	2,615
NEW ENGLAND	1,903	2,055	13,187	12,848	146	78	4,359	4,838	50	79
Maine	46	32	774	694	15	-	52	46	-	-
N.H.	29	66	577	547	8	12	74	124	8	7
Vt.	31	18	304	289	7	2	41	42	2	21
Mass.	646	995	5,472	5,131	76	58	1,619	1,641	33	45
R.I.	119	128	1,481	1,456	7	-	335	388	7	6
Conn.	1,032	816	4,579	4,731	33	6	2,238	2,597	-	-
MID. ATLANTIC	13,664	14,208	44,966	45,872	100	34	27,436	31,019	261	209
Upstate N.Y.	2,137	1,853	N	N	69	-	4,438	5,651	192	166
N.Y. City	7,308	7,847	23,191	23,143	9	6	10,543	10,980	-	3
N.J.	2,611	2,881	6,568	9,313	22	16	5,096	6,555	-	-
Pa.	1,608	1,627	15,207	13,416	N	12	7,359	7,833	69	40
E.N. CENTRAL	3,198	4,026	44,014	64,603	324	193	28,256	44,114	405	365
Ohio	638	870	8,742	15,486	81	38	6,069	11,279	14	27
Ind.	447	463	6,873	7,235	56	31	4,603	4,652	10	8
Ill.	1,356	1,800	7,954	18,353	57	-	3,873	13,027	66	73
Mich.	564	682	13,989	15,533	130	87	10,876	11,484	315	257
Wis.	193	211	6,456	7,996	N	37	2,835	3,672	-	-
W.N. CENTRAL	848	1,203	17,673	23,649	395	294	8,176	11,492	117	72
Minn.	157	225	U	4,017	182	151	U	1,881	3	1
Iowa	86	71	3,264	3,075	97	56	847	779	25	33
Mo.	392	619	8,448	9,410	38	47	5,328	6,369	75	19
N. Dak.	13	11	546	651	10	8	37	24	2	-
S. Dak.	8	10	1,003	1,091	24	24	105	135	-	-
Nebr.	72	83	1,729	2,067	27	-	688	788	2	6
Kans.	120	184	2,683	3,338	17	8	1,171	1,516	10	13
S. ATLANTIC	10,800	13,028	67,809	37,088	159	113	66,684	69,518	218	146
Del.	184	230	1,276	1,148	4	4	904	1,101	-	1
Md.	1,695	1,950	5,339	U	16	6	9,801	8,278	12	2
D.C.	690	1,007	N	N	2	-	3,293	3,313	-	-
Va.	878	894	8,595	8,455	N	38	6,026	7,000	23	12
W. Va.	92	88	2,227	1,583	N	1	706	575	15	9
N.C.	680	678	13,780	U	56	30	13,585	13,831	41	39
S.C.	631	663	9,285	U	8	7	8,521	8,275	33	23
Ga.	1,267	1,870	9,563	8,573	34	-	10,997	13,857	U	-
Fla.	4,683	5,648	17,744	17,329	38	27	12,851	13,288	94	60
E.S. CENTRAL	1,560	1,741	24,650	22,867	77	32	24,658	24,295	266	439
Ky.	290	307	4,812	5,067	24	-	3,085	3,165	11	27
Tenn.	638	640	9,513	9,902	38	32	8,196	8,832	188	321
Ala.	384	470	6,369	6,292	12	-	8,880	9,942	7	3
Miss.	248	324	3,956	1,606	3	-	4,497	2,356	60	88
W.S. CENTRAL	4,641	5,107	41,215	42,162	56	11	26,801	29,244	342	288
Ark.	180	205	1,015	1,317	9	1	2,174	3,013	5	8
La.	744	1,164	6,980	5,508	6	3	6,744	5,804	168	163
Okla.	240	191	5,639	5,698	7	4	3,699	3,678	7	1
Tex.	3,477	3,547	27,581	29,639	34	3	14,184	16,749	162	116
MOUNTAIN	1,263	1,527	17,576	19,205	198	102	6,060	5,815	340	447
Mont.	34	33	772	934	21	-	34	24	19	13
Idaho	41	31	1,124	1,130	26	13	93	81	45	92
Wyo.	13	5	436	475	16	-	43	34	160	139
Colo.	299	404	1,896	2,012	71	51	1,578	1,157	28	45
N. Mex.	141	139	2,359	2,965	7	5	945	637	48	68
Ariz.	323	461	8,002	8,282	N	23	2,653	2,871	24	52
Utah	92	142	1,226	1,183	47	-	197	233	3	19
Nev.	320	312	1,761	2,224	10	10	517	778	13	19
PACIFIC	5,704	8,494	54,749	54,784	254	184	12,584	16,846	354	570
Wash.	458	539	6,829	7,184	69	54	1,455	1,564	21	43
Oreg.	248	359	3,619	4,141	61	67	555	646	3	6
Calif.	4,913	7,426	41,990	41,278	113	56	9,927	13,980	211	350
Alaska	37	28	1,124	888	11	1	296	324	-	3
Hawaii	48	142	1,187	1,293	N	6	351	332	119	168
Guam	2	4	86	283	N	-	9	47	-	6
P.R.	1,510	1,785	U	U	32	U	452	501	108	128
V.I.	80	17	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	1	-	N	N	N	U	17	11	2	-

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention last update September 30, 1997.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending September 27, 1997, and September 28, 1996 (39th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997
UNITED STATES	657	683	7,348	11,440	1,275	1,194	5,875	8,874	12,736	14,150	5,849
NEW ENGLAND	57	40	2,342	3,339	68	43	110	128	314	320	904
Maine	2	2	8	36	1	7	-	-	11	17	159
N.H.	6	3	28	40	7	2	-	1	10	9	30
Vt.	10	4	8	20	2	3	-	-	5	1	99
Mass.	17	22	242	186	24	15	53	61	179	160	190
R.I.	6	9	338	405	5	6	2	1	29	27	26
Conn.	16	N	1,718	2,652	29	10	55	65	80	106	391
MID. ATLANTIC	133	171	3,994	6,820	323	364	289	399	2,323	2,632	1,192
Upstate N.Y.	39	55	1,730	3,148	53	67	26	62	317	307	916
N.Y. City	7	13	46	320	183	221	66	112	1,196	1,378	U
N.J.	15	12	911	1,523	68	54	110	131	466	552	127
Pa.	72	91	1,307	1,829	19	22	87	94	344	395	149
E.N. CENTRAL	196	214	70	362	105	145	502	1,301	1,191	1,514	143
Ohio	88	75	48	20	17	13	153	482	223	213	95
Ind.	35	41	18	23	12	14	122	162	102	133	10
Ill.	7	30	4	8	31	71	52	377	572	813	13
Mich.	56	34	-	6	35	33	102	133	204	277	24
Wis.	10	34	U	305	10	14	73	147	90	78	1
W.N. CENTRAL	47	38	85	128	44	36	115	267	401	358	376
Minn.	1	3	56	38	19	15	U	34	107	81	43
Iowa	11	8	6	16	9	2	6	17	45	47	126
Mo.	15	11	17	41	7	9	82	186	169	150	18
N. Dak.	2	-	-	-	3	1	-	-	9	6	59
S. Dak.	2	2	1	-	1	-	-	-	10	15	60
Nebr.	12	11	2	3	1	2	5	10	14	14	1
Kans.	4	3	3	30	4	7	22	20	47	45	69
S. ATLANTIC	94	88	550	552	270	210	2,481	2,871	2,502	2,650	2,376
Del.	9	10	33	161	5	3	17	33	18	32	47
Md.	17	21	393	258	74	62	714	512	244	221	433
D.C.	4	7	7	3	14	7	87	103	75	104	5
Va.	19	13	46	41	60	36	179	325	220	234	505
W. Va.	N	N	5	11	-	4	3	9	45	46	71
N.C.	12	7	27	59	14	23	547	781	321	361	705
S.C.	6	4	2	4	15	10	285	298	237	275	148
Ga.	-	3	1	1	28	23	418	520	477	475	245
Fla.	26	23	36	14	60	42	231	290	865	902	217
E.S. CENTRAL	37	38	61	63	28	29	1,312	1,914	933	1,031	224
Ky.	6	6	7	22	7	7	107	108	132	176	27
Tenn.	25	17	35	18	7	12	582	629	321	346	124
Ala.	2	3	7	6	10	3	347	426	324	327	73
Miss.	4	12	12	17	4	7	276	751	156	182	-
W.S. CENTRAL	13	18	61	88	16	27	706	1,412	1,745	1,604	253
Ark.	-	1	16	20	4	-	72	191	147	141	27
La.	2	1	2	2	9	7	276	399	178	18	5
Okla.	3	6	13	15	3	-	97	143	132	124	86
Tex.	8	10	30	51	-	20	261	679	1,288	1,321	135
MOUNTAIN	43	34	16	7	60	48	168	123	354	453	153
Mont.	1	1	-	-	2	6	-	-	7	14	38
Idaho	2	-	3	-	-	-	1	4	8	7	-
Wyo.	1	3	3	3	2	7	-	2	2	6	31
Colo.	15	7	5	-	26	19	11	24	64	54	19
N. Mex.	2	1	1	1	8	2	46	7	20	65	9
Ariz.	9	15	1	-	10	6	96	70	182	176	43
Utah	8	2	1	1	3	4	5	2	25	39	5
Nev.	5	5	2	2	9	4	9	14	46	92	8
PACIFIC	37	42	169	81	361	292	192	459	2,973	3,588	228
Wash.	6	5	8	13	18	20	9	8	221	206	-
Oreg.	-	-	17	17	17	19	7	6	121	128	14
Calif.	30	33	142	50	321	243	174	443	2,442	3,053	191
Alaska	-	1	2	-	3	3	1	-	61	59	23
Hawaii	1	3	-	1	2	7	1	2	128	142	-
Guam	-	1	-	-	-	-	2	3	13	55	-
P.R.	-	-	-	-	5	1	189	171	164	130	55
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	9	1	2	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending September 27, 1997, and September 28, 1996 (39th Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	1997	Cum. 1997	1997	Cum. 1997	Cum. 1997	Cum. 1996
UNITED STATES	781	800	20,488	20,730	6,320	7,222	-	61	-	49	110	449
NEW ENGLAND	46	27	487	290	111	167	-	11	-	6	17	16
Maine	5	-	47	15	6	2	-	-	-	1	1	-
N.H.	6	10	23	11	11	13	-	1	-	-	1	-
Vt.	3	1	11	6	5	11	-	-	-	-	-	2
Mass.	28	14	189	150	44	62	-	10	-	4	14	12
R.I.	2	2	115	13	13	9	-	-	-	-	-	-
Conn.	2	-	102	95	32	70	-	-	-	1	1	2
MID. ATLANTIC	98	165	1,409	1,442	946	1,075	-	14	-	8	22	36
Upstate N.Y.	24	41	241	324	205	257	-	2	-	3	5	10
N.Y. City	26	43	528	443	340	381	-	5	-	2	7	11
N.J.	37	44	193	279	155	211	-	2	-	-	2	3
Pa.	11	37	447	396	246	226	-	5	-	3	8	12
E.N. CENTRAL	128	138	2,024	1,904	660	827	-	6	-	3	9	20
Ohio	74	78	251	602	60	99	-	-	-	-	-	5
Ind.	13	9	227	244	75	107	-	-	-	-	-	-
Ill.	28	38	471	559	164	261	-	6	-	1	7	3
Mich.	12	8	961	333	329	288	-	-	-	2	2	3
Wis.	1	5	114	166	32	72	-	-	-	-	-	9
W.N. CENTRAL	41	37	1,650	1,786	335	374	-	12	-	5	17	22
Minn.	27	23	132	95	28	41	-	3	-	5	8	18
Iowa	6	4	360	275	31	54	-	-	-	-	-	-
Mo.	4	7	830	901	235	220	-	1	-	-	1	3
N. Dak.	-	-	10	89	4	2	-	-	-	-	-	-
S. Dak.	2	1	18	41	1	5	-	8	-	-	8	-
Nebr.	1	1	79	113	12	27	-	-	-	-	-	-
Kans.	1	1	221	272	24	25	-	-	-	-	-	1
S. ATLANTIC	133	147	1,339	948	975	998	-	1	-	10	11	11
Del.	-	2	25	13	5	7	-	-	-	-	-	1
Md.	48	53	178	158	139	128	-	-	-	2	2	2
D.C.	-	5	17	29	25	28	-	-	-	1	1	-
Va.	12	8	171	135	95	111	-	-	-	1	1	3
W. Va.	3	7	10	13	14	21	-	-	-	-	-	-
N.C.	19	22	150	110	197	266	-	-	-	2	2	2
S.C.	4	4	88	43	84	68	-	-	-	1	1	-
Ga.	25	31	274	122	105	30	-	-	-	1	1	2
Fla.	22	15	426	325	311	339	-	1	-	2	3	1
E.S. CENTRAL	40	23	466	1,027	507	635	-	-	-	-	-	2
Ky.	5	5	60	40	29	58	-	-	-	-	-	-
Tenn.	25	9	292	668	336	358	-	-	-	-	-	2
Ala.	10	8	70	150	55	51	-	-	-	-	-	-
Miss.	-	1	44	169	87	168	-	-	-	-	-	-
W.S. CENTRAL	40	33	4,266	4,091	740	892	-	3	-	4	7	26
Ark.	1	-	201	346	43	63	-	-	-	-	-	-
La.	10	3	178	132	118	103	-	-	-	-	-	-
Okla.	26	26	1,178	1,752	37	24	-	-	-	-	-	-
Tex.	3	4	2,709	1,861	542	702	-	3	-	4	7	26
MOUNTAIN	79	39	3,357	3,308	704	872	-	6	-	2	8	156
Mont.	-	-	61	92	7	10	-	-	-	-	-	-
Idaho	1	1	106	168	28	74	-	-	-	-	-	1
Wyo.	4	-	31	26	31	35	-	-	-	-	-	1
Colo.	12	11	327	345	127	106	-	-	-	-	-	7
N. Mex.	8	9	275	306	208	311	-	-	-	-	-	16
Ariz.	29	12	1,736	1,294	163	196	-	5	-	-	5	8
Utah	3	6	481	760	77	73	-	-	-	1	1	118
Nev.	22	-	340	317	63	67	-	1	-	1	2	5
PACIFIC	176	191	5,490	5,934	1,342	1,382	-	8	-	11	19	160
Wash.	4	2	435	373	54	72	-	1	-	1	2	38
Oreg.	29	25	286	701	77	81	-	-	-	-	-	13
Calif.	131	156	4,636	4,763	1,185	1,208	-	5	-	8	13	38
Alaska	5	6	25	36	18	10	-	-	-	-	-	63
Hawaii	7	2	108	61	8	11	-	2	-	2	4	8
Guam	-	-	-	7	1	1	U	-	U	-	-	-
P.R.	-	1	224	165	1,092	706	-	-	-	-	-	2
V.I.	-	-	-	30	-	30	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	6	10	1	1	34	5	U	1	U	-	1	-

N: Not notifiable U: Unavailable -: no reported cases

*Of 178 cases among children aged <5 years, serotype was reported for 93 and of those, 38 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending September 27, 1997, and September 28, 1996 (39th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996
UNITED STATES	2,454	2,412	15	432	534	92	3,779	4,202	1	137	216
NEW ENGLAND	157	99	-	8	1	19	692	901	-	1	26
Maine	17	10	-	-	-	-	6	35	-	-	-
N.H.	13	3	-	-	-	10	96	81	-	-	-
Vt.	4	3	-	-	-	-	191	79	-	-	2
Mass.	76	41	-	2	1	9	368	654	-	1	20
R.I.	14	10	-	5	-	-	12	25	-	-	-
Conn.	33	32	-	1	-	-	19	27	-	-	4
MID. ATLANTIC	216	254	-	43	65	-	273	319	-	29	11
Upstate N.Y.	54	67	-	7	20	-	94	174	-	2	4
N.Y. City	39	37	-	3	16	-	56	29	-	27	5
N.J.	46	54	-	5	3	-	9	22	-	-	2
Pa.	77	96	-	28	26	-	114	94	-	-	-
E.N. CENTRAL	348	354	1	45	107	25	327	533	-	5	3
Ohio	135	126	1	20	39	15	124	191	-	-	-
Ind.	41	51	-	7	7	6	45	43	-	-	-
Ill.	104	99	-	9	20	4	59	130	-	2	1
Mich.	42	37	-	9	39	-	40	32	-	-	2
Wis.	26	41	-	-	2	-	59	137	-	3	-
W.N. CENTRAL	180	191	-	14	15	11	319	263	-	-	-
Minn.	29	25	-	5	5	5	201	196	-	-	-
Iowa	39	40	-	7	1	6	43	13	-	-	-
Mo.	80	72	-	-	6	-	50	30	-	-	-
N. Dak.	2	3	-	-	2	-	2	1	-	-	-
S. Dak.	5	10	-	-	-	-	4	4	-	-	-
Nebr.	8	18	-	2	-	-	6	6	-	-	-
Kans.	17	23	-	-	1	-	13	13	-	-	-
S. ATLANTIC	440	379	1	60	88	5	369	438	1	69	91
Del.	5	2	-	-	-	-	1	21	-	-	-
Md.	40	49	-	4	28	-	106	162	-	3	-
D.C.	-	5	-	-	-	-	3	-	-	1	1
Va.	42	47	-	10	12	-	42	56	-	1	2
W. Va.	15	13	-	-	-	-	6	2	-	-	-
N.C.	78	62	-	9	19	-	99	76	-	53	77
S.C.	48	45	-	10	5	1	23	30	-	9	1
Ga.	84	110	-	8	3	-	11	19	-	-	-
Fla.	128	46	1	19	21	4	78	72	1	2	10
E.S. CENTRAL	193	178	-	21	19	1	86	178	-	-	2
Ky.	40	23	-	3	-	-	24	135	-	-	-
Tenn.	72	48	-	5	1	1	33	18	-	-	-
Ala.	63	62	-	7	3	-	21	18	-	-	2
Miss.	18	45	-	6	15	-	8	7	-	-	N
W.S. CENTRAL	239	268	-	45	39	-	164	109	-	4	8
Ark.	30	30	-	1	1	-	28	5	-	-	-
La.	46	49	-	12	13	-	17	8	-	-	1
Okla.	32	30	-	-	-	-	25	8	-	-	-
Tex.	131	159	-	32	25	-	94	88	-	4	7
MOUNTAIN	149	144	-	51	22	16	925	378	-	6	6
Mont.	8	6	-	-	-	-	16	27	-	-	-
Idaho	9	20	-	2	-	2	543	100	-	1	2
Wyo.	2	3	-	1	-	-	7	4	-	-	-
Colo.	39	31	-	3	4	10	222	130	-	-	2
N. Mex.	23	22	N	N	N	2	76	50	-	-	-
Ariz.	41	32	-	31	1	-	31	24	-	5	1
Utah	12	14	-	7	3	-	14	13	-	-	-
Nev.	15	16	-	7	14	2	16	30	-	-	1
PACIFIC	532	545	13	145	178	15	624	1,083	-	23	69
Wash.	64	75	-	14	19	15	282	461	-	5	15
Oreg.	103	96	N	N	N	-	17	53	-	-	1
Calif.	356	363	11	107	131	-	300	535	-	10	50
Alaska	2	7	1	4	2	-	14	2	-	-	-
Hawaii	7	4	1	20	26	-	11	32	-	8	3
Guam	1	4	U	1	6	U	-	-	U	-	-
P.R.	9	11	-	7	1	-	1	2	-	-	-
V.I.	-	-	-	-	1	-	-	-	-	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	4	-	U	-	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending September 27, 1997 (39th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	501	348	95	37	14	7	32
Boston, Mass.	93	52	29	6	5	1	8
Bridgeport, Conn.	45	33	8	4	-	-	1
Cambridge, Mass.	16	15	1	-	-	-	1
Fall River, Mass.	21	13	6	2	-	-	-
Hartford, Conn.	52	29	11	5	3	4	1
Lowell, Mass.	23	18	3	2	-	-	-
Lynn, Mass.	10	8	1	-	-	1	-
New Bedford, Mass.	28	22	3	2	-	1	1
New Haven, Conn.	33	22	6	5	-	-	4
Providence, R.I.	57	43	7	4	3	-	1
Somerville, Mass.	1	1	-	-	-	-	-
Springfield, Mass.	41	29	8	3	1	-	5
Waterbury, Conn.	27	24	1	1	1	-	5
Worcester, Mass.	54	39	11	3	1	-	5
MID. ATLANTIC	2,242	1,564	414	178	38	47	120
Albany, N.Y.	49	32	7	6	2	2	3
Allentown, Pa.	16	12	4	-	-	-	-
Buffalo, N.Y.	63	43	13	4	1	2	3
Camden, N.J.	29	18	8	1	1	1	2
Elizabeth, N.J.	18	13	4	-	1	-	2
Erie, Pa.	42	34	6	-	2	-	2
Jersey City, N.J.	55	35	7	10	-	3	2
New York City, N.Y.	1,097	780	196	83	17	21	42
Newark, N.J.	52	21	18	8	3	2	3
Paterson, N.J.	26	18	4	2	2	-	6
Philadelphia, Pa.	399	260	84	44	6	4	22
Pittsburgh, Pa.§	84	66	10	4	1	3	9
Reading, Pa.	42	34	7	-	1	-	3
Rochester, N.Y.	122	86	22	7	-	7	12
Schenectady, N.Y.	16	16	-	-	-	-	-
Scranton, Pa.	23	19	3	1	-	-	2
Syracuse, N.Y.	65	49	11	3	1	1	4
Trenton, N.J.	24	14	6	3	-	1	2
Utica, N.Y.	20	14	4	2	-	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,899	1,259	387	151	49	52	118
Akron, Ohio	49	29	11	3	1	5	-
Canton, Ohio	45	34	8	3	-	-	3
Chicago, Ill.	357	200	92	40	15	9	30
Cincinnati, Ohio	112	77	22	8	1	4	13
Cleveland, Ohio	134	83	30	14	2	5	1
Columbus, Ohio	173	119	32	12	3	7	14
Dayton, Ohio	111	76	24	8	2	1	6
Detroit, Mich.	195	122	40	23	8	2	1
Evansville, Ind.	40	28	8	1	2	1	2
Fort Wayne, Ind.	58	37	13	2	-	6	5
Gary, Ind.	U	U	U	U	U	U	U
Grand Rapids, Mich.	68	47	14	6	-	1	6
Indianapolis, Ind.	168	112	31	15	5	5	6
Lansing, Mich.	31	25	5	1	-	-	2
Milwaukee, Wis.	100	73	21	5	1	-	10
Peoria, Ill.	36	26	8	1	1	-	3
Rockford, Ill.	35	24	7	1	3	-	3
South Bend, Ind.	47	40	3	2	-	2	4
Toledo, Ohio	84	60	12	4	5	3	6
Youngstown, Ohio	56	47	6	2	-	1	3
W.N. CENTRAL	748	555	110	49	16	13	41
Des Moines, Iowa	127	96	21	4	5	1	9
Duluth, Minn.	32	24	5	2	1	-	1
Kansas City, Kans.	24	14	6	4	-	-	-
Kansas City, Mo.	94	70	14	5	-	-	7
Lincoln, Nebr.	33	27	2	4	-	-	2
Minneapolis, Minn.	159	116	24	8	5	6	9
Omaha, Nebr.	65	51	8	2	3	1	-
St. Louis, Mo.	101	67	16	14	1	3	4
St. Paul, Minn.	49	40	5	2	1	1	5
Wichita, Kans.	64	50	9	4	-	1	4
S. ATLANTIC	1,242	739	302	117	59	25	66
Atlanta, Ga.	185	95	43	20	6	1	10
Baltimore, Md.	191	115	42	24	6	4	14
Charlotte, N.C.	101	71	18	8	2	2	8
Jacksonville, Fla.	112	70	26	5	7	4	3
Miami, Fla.	100	53	25	15	5	2	1
Norfolk, Va.	58	32	15	4	5	2	4
Richmond, Va.	U	U	U	U	U	U	U
Savannah, Ga.	45	26	13	4	2	-	2
St. Petersburg, Fla.	65	49	7	3	3	3	8
Tampa, Fla.	196	117	63	10	3	3	11
Washington, D.C.	191	107	39	24	17	4	5
Wilmington, Del.	18	4	11	-	3	-	-
E.S. CENTRAL	794	534	186	62	20	10	45
Birmingham, Ala.	154	103	30	12	7	-	13
Chattanooga, Tenn.	70	42	20	6	1	1	4
Knoxville, Tenn.	64	44	11	8	1	-	9
Lexington, Ky.	92	57	23	7	3	2	10
Memphis, Tenn.	165	122	28	5	7	2	-
Mobile, Ala.	71	41	19	6	-	5	-
Montgomery, Ala.	43	30	12	1	-	-	3
Nashville, Tenn.	135	95	22	17	1	-	6
W.S. CENTRAL	1,365	874	297	134	31	29	65
Austin, Tex.	82	50	15	11	4	2	3
Baton Rouge, La.	31	24	5	2	-	-	1
Corpus Christi, Tex.	47	34	8	4	-	1	1
Dallas, Tex.	165	101	43	14	6	1	4
El Paso, Tex.	99	64	21	12	1	1	8
Ft. Worth, Tex.	94	58	18	13	1	4	3
Houston, Tex.	300	180	71	34	6	9	22
Little Rock, Ark.	64	41	17	3	2	1	2
New Orleans, La.	110	63	27	12	4	4	-
San Antonio, Tex.	189	126	36	16	6	5	7
Shreveport, La.	70	45	19	5	-	1	8
Tulsa, Okla.	114	88	17	8	1	-	6
MOUNTAIN	931	612	183	81	33	21	53
Albuquerque, N.M.	125	86	20	11	5	3	4
Boise, Idaho	41	28	5	5	3	-	1
Colo. Springs, Colo.	57	35	12	7	2	1	3
Denver, Colo.	111	74	21	14	1	1	5
Las Vegas, Nev.	147	101	27	14	5	-	11
Ogden, Utah	27	19	5	2	-	1	3
Phoenix, Ariz.	172	95	42	14	10	10	13
Pueblo, Colo.	27	16	5	4	-	2	1
Salt Lake City, Utah	100	69	18	6	4	3	7
Tucson, Ariz.	124	89	28	4	3	-	5
PACIFIC	1,714	1,190	315	137	39	33	119
Berkeley, Calif.	21	14	2	5	-	-	2
Fresno, Calif.	73	46	15	6	3	3	5
Glendale, Calif.	24	17	5	2	-	-	1
Honolulu, Hawaii	75	56	14	3	1	1	5
Long Beach, Calif.	U	U	U	U	U	U	U
Los Angeles, Calif.	606	426	106	53	10	11	32
Pasadena, Calif.	31	23	2	2	3	1	5
Portland, Oreg.	135	88	29	11	7	-	6
Sacramento, Calif.	131	93	25	7	3	3	17
San Diego, Calif.	147	100	28	14	2	3	16
San Francisco, Calif.	134	91	31	10	2	-	10
San Jose, Calif.	158	107	28	11	4	8	13
Santa Cruz, Calif.	28	22	5	1	-	-	1
Seattle, Wash.	U	U	U	U	U	U	U
Spokane, Wash.	54	37	14	2	-	1	2
Tacoma, Wash.	97	70	11	10	4	2	4
TOTAL	11,436¶	7,675	2,269	946	299	237	659

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

Contributors to the Production of the *MMWR* (Weekly)

Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data

Denise Koo, M.D., M.P.H.

State Support Team

Robert Fagan
Karl A. Brendel
Siobhan Gilchrist, M.P.H.
Harry Holden
Gerald Jones
Felicia Perry
Carol A. Worsham

CDC Operations Team

Carol M. Knowles
Deborah A. Adams
Willie J. Anderson
Christine R. Burgess
Patsy A. Hall
Myra A. Montalbano
Angela Trosclair, M.S.

Desktop Publishing and Graphics Support

Morie M. Higgins
Peter M. Jenkins

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DEPARTMENT OF
HEALTH AND HUMAN SERVICES
Centers for Disease Control
and Prevention (CDC)
Atlanta, Georgia 30333

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